

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER
<b>TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371</b>		1454.1084
		<b>09/913496</b>
INTERNATIONAL APPLICATION NO. PCT/DE00/00313	INTERNATIONAL FILING DATE 02 February 2000	PRIORITY DATE CLAIMED 16 February 1999
TITLE OF INVENTION SYSTEM AND METHOD FOR INTERCONNECTION OF COMPONENTS		
APPLICANT(S) FOR DO/EO/US Thomas JACHMANN et al.		
<p>Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:</p> <ol style="list-style-type: none"> <li><input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.</li> <li><input checked="" type="checkbox"/> This is an express request to immediately begin national examination procedures (35 U.S.C. 371(f)).</li> <li><input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (PCT Article 31).</li> <li><input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))             <ol style="list-style-type: none"> <li><input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau).</li> <li><input type="checkbox"/> has been transmitted by the International Bureau.</li> <li><input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li><input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)).</li> <li><input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))             <ol style="list-style-type: none"> <li><input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau).</li> <li><input type="checkbox"/> have been transmitted by the International Bureau.</li> <li><input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li><input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li><input checked="" type="checkbox"/> An oath or declaration of the inventor (35 U.S.C. 371(c)(4)).</li> <li><input type="checkbox"/> A translation of the Annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol> <p>Items 10-15 below concern document(s) or information included:</p> <ol style="list-style-type: none"> <li><input checked="" type="checkbox"/> An Information Disclosure Statement Under 37 CFR 1.97 and 1.98.</li> <li><input checked="" type="checkbox"/> An assignment document for recording.             <p>Please mail the recorded assignment document to:</p> <ol style="list-style-type: none"> <li><input checked="" type="checkbox"/> the person whose signature, name &amp; address appears at the bottom of this document.</li> <li><input type="checkbox"/> the following:</li> </ol> </li> <li><input checked="" type="checkbox"/> A preliminary amendment.</li> <li><input checked="" type="checkbox"/> A substitute specification</li> <li><input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li><input type="checkbox"/> Other items or information:</li> </ol>		

[X] The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees as follows:					
CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
	TOTAL CLAIMS	18 -20=	0	x \$ 18.00	0.00
	INDEPENDENT CLAIMS	3 -3=	0	x \$ 80.00	0.00
	MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+\$270.00	0.00
	BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(4):				
	[ ] Neither international preliminary examination fee (37 CFR 1.482) nor				
	international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....\$1,000				
	[ ] International preliminary examination fee (37 C.F.R. 1.482) not paid to USPTO but International				
	Search Report prepared by the EPO or JPO.. .....\$ 860				
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	search fee (37 C.F.R. 1.445(a)(2)) paid to USPTO.....\$ 710				
	[ ] International preliminary examination fee paid to USPTO (37 CFR 1.482)				
	but all claims did not satisfy provision of PCT Article 33(1)-(4).....\$ 690				
	[ ] International preliminary examination fee paid to USPTO (37 CFR 1.482)				
	and all claims satisfied provisions of PCT Article 33(2) to (4) .....\$ 100				860.00
	Surcharge of \$130 for furnishing the National fee or oath or declaration later than				
	[ ] 20 [ ] 30 mos. from the earliest claimed priority date (37 CFR 1.482(e)).				0.00
	TOTAL OF ABOVE CALCULATIONS				860.00
	Reduction by 1/2 for filing by small entity, if applicable. Affidavit must be filed also. (Note 37 CFR				
	1.9, 1.27, 1.28.)				
	SUBTOTAL				860.00
	Processing fee of \$130 for furnishing the English Translation later than				
	[ ] 20 [ ] 30 mos. from the earliest claimed priority date (37 CFR 1.482(f)).				
	TOTAL NATIONAL FEE				860.00
	Fee for recording the enclosed assignment (37 CFR 1.21(h)).				+ 40.00
	TOTAL FEES ENCLOSED				900.00

- a. [X] A check in the amount of \$ 900.00 to cover the above fees is enclosed.
- b. [ ] Please charge my Deposit Account No. 19-3935 in the Amount of \$ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-3935. A duplicate copy of this sheet is enclosed.



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PATENT TRADEMARK OFFICE

8/16/01

DATE

*Richard A. Gollhofer*

Richard A. Gollhofer

REGISTRATION NO. 31,106

Docket No. 1454.1084/RAG

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Thomas JACHMANN et al.

Serial No. (Unassigned)

Group Art Unit: (unassigned)

Confirmation No.

Filed: (concurrently)

Examiner: (unassigned)

For: SYSTEM AND METHOD FOR INTERCONNECTING COMPONENTS

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Before examination of the above-identified application, please amend the application as follows:

IN THE SPECIFICATION

Please REPLACE the pending specification with the Substitute Specification attached hereto.

IN THE ABSTRACT

Please REPLACE the originally filed Abstract with the enclosed Substitute Abstract.

IN THE CLAIMS

Please CANCEL claims 1-10 without prejudice or disclaimer of any of the subject matter claimed therein and ADD new claims in accordance with the following:

11. A system for interconnection of software components for at least one data processing application, comprising:

a storage unit to store components surrounded by a container, the components having at least one interface intended for interconnection of the components by an interconnection component, the interconnection component, and not the container, containing information required for interconnection of the components.

12. The system as claimed in claim 11, wherein the components locally provide interconnection information containing interconnection intelligence required for the interconnection of the components.

13. The system as claimed in claim 11, wherein the components are ActiveX components.

14. The system as claimed in claim 13, wherein the components are input and output components.

15. The system as claimed in claim 11, wherein the interconnection component is intended for the components to be interconnected to search for matching interfaces.

16. The system as claimed in claim 11, wherein the components are intended for multiple interconnections with further components.

17. A method for interconnection of software components for at least one data processing application, comprising  
storing components interconnected via at least one interface and surrounded by a container that does not include information to interconnect the components; and  
interconnecting the components using an interconnection component included in the container and containing information required for interconnection of the components.

18. The method as claimed in claim 17, wherein the components locally provide interconnection information containing interconnection intelligence required for the interconnection of the components.

19. The method as claimed in claim 17, wherein the components are ActiveX components.

20. The method as claimed in claim 18, wherein the components are input and output components.

21. The method as claimed in claim 17, wherein the interconnection component searches for matching interfaces from components to be interconnected.

22. The method as claimed in claim 17, wherein the components are used for multiple interconnections with further components.

23. At least one computer-readable medium storing at least one data processing application, comprising:  
components surrounded by a container, the components having at least one interface intended for interconnection of the components by an interconnection component, the interconnection component, and not the container, containing information required for interconnection of the components.

24. The at least one computer-readable medium as claimed in claim 23, wherein the components locally provide interconnection information containing interconnection intelligence required for the interconnection of the components.

25. The at least one computer-readable medium as claimed in claim 23, wherein the components are ActiveX components.

26. The at least one computer-readable medium as claimed in claim 25, wherein the components are input and output components.

27. The at least one computer-readable medium as claimed in claim 23, wherein the interconnection component searches for matching interfaces from components to be interconnected.

28. The at least one computer-readable medium as claimed in claim 23, wherein the components are used for multiple interconnections with further components.

## REMARKS

This Preliminary Amendment is submitted to improve the form of the English translation as filed. It is respectfully requested that this Preliminary Amendment be entered in the above-referenced application.

In accordance with the foregoing, claims 1-10 have been canceled and claims 11-28 have been added. Thus, claims 11-28 are pending and are under consideration.

A substitute specification is also being filed herewith. The substitute specification is accompanied by a marked-up copy of the original specification. No new matter has been added.

If there are any questions regarding these matters, such questions can be addressed by telephone to the undersigned. Otherwise, an early action on the merits is respectfully solicited.

If any further fees are required in connection with the filing of this Preliminary Amendment, please charge same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

By:



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Washington, D.C. 20001  
(202) 434-1500

Date: 8/16/01

## **SUBSTITUTE SPECIFICATION**

### **TITLE OF THE INVENTION**

#### **SYSTEM AND METHOD FOR INTERCONNECTION OF COMPONENTS**

### **BACKGROUND OF THE INVENTION**

#### **1. Field of the Invention**

**[0001]** The invention relates to a system and a method for interconnection of components, in particular of software components for at least one data processing application.

#### **2. Description of the Related Art**

**[0002]** Such a system is used, for example, in the field of software applications. In this case, there is frequently a desire to construct the individual applications from reusable components. This results in the necessity to interconnect the individual components with one another in various combinations. Components are in this case generally interconnected by special programming, which is referred to as glue code, but this may involve considerable effort.

### **SUMMARY OF THE INVENTION**

**[0003]** The invention is based on the object of specifying a system and a method for interconnection of components, which allows interconnection of the components without special programming, for example in the form of what is referred to as glue code.

**[0004]** This object is achieved by a system and a method having interfaces, for example input/output interfaces, interconnected with one another either directly or with the interposition of the interconnection components. The effort for interconnection of the components is thus considerably reduced. Furthermore, it is possible to interconnect the components with one another in different configurations in a reusable manner. Special connection programming, for example in the form of glue code, is completely avoided, and all that is required is simple connection configuration. Overall, this leads to the interconnection intelligence being shifted from a container which surrounds the components into the components themselves. This makes it possible to design the container to be simpler since it no longer needs to have the capacity for script or programming.

**[0005]** Shifting the interconnection intelligence from a container which surrounds the components to the components themselves can be ensured by the interconnection components containing information which is intended for interconnection of components.

**[0006]** One advantageous application option is for the components to be in the form of ActiveX components, in particular input and output components.

**[0007]** The object of an adapter function for the interconnection components can be taken into account by the interconnection component being provided for automatic active coupling and/or for adaptation of interfaces which do not match, or do not entirely match.

**[0008]** The complexity, for example, for memory space for storage of interconnection information and special container configurations can thus be considerably be reduced, since the components are intended for multiple interconnection with further components.

**[0009]** The invention will be described and explained in more detail in the following text with reference to the exemplary embodiments, which are illustrated in the figures, in which:

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of an exemplary embodiment of a system for interconnection of components, with direct interconnection of the components, and

Figure 2 is a further exemplary embodiment of a system for interconnection of components, with interconnection of the components via an intermediate interconnection component.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0010]** Figure 1 is a block diagram of a first exemplary embodiment of a system for interconnection of components 1, 2a..2n, with direct interconnection of the components 1, 2a..2n. The first component 1 is, for example, an input component, which has an input text field 4. Furthermore, the input component 1 contains interconnection information 6, which includes interconnection information for interconnection of an interface S1 for the input component 1 with further components 2a..2n. The further components 2a..2n are, for example, output components, which have an output text field 5 for outputting a text which can be entered in the input text field 4 of the first component. Furthermore, the further components 2a..2n have a respective interface S2a..S2n, each of which can be interconnected with the interface S1. In addition to the local interconnection information 6 in the first input component 1, central



interconnection information 3 is furthermore provided in the exemplary embodiment illustrated in Figure 1 and, for example, contains centrally stored interconnection information for interconnection of the components 1, 2a..2n. The local interconnection information 6 and the central interconnection information 3 thus control the interconnection of the components 1, 2a..2n, via the signal flows which are indicated by arrows 8, 9 in Figure 1.

**[0011]** The special feature of the system illustrated in Figure 1 for interconnection of software components 1, 2a..2n is that the components 1, 2a..2n are connected to one another without any complex programming, which is referred to as glue code, since the components are connected to one another via the interfaces S1, S2..S2n, which generally exist in any case in the software components 1, 2a..2n. One application example is, for example, the interconnection of what are referred to as ActiveX components in the Microsoft Windows environment. For example, ActiveX components can be interconnected, for example, from the Internet Explorer, come from Visual Basic, etc. The input component 1 uses as the input field, for example, a defined outgoing-COM interface S1. Where the input field 4 is amended, the edited text is interconnected via the interface S1, via the lines L1..Ln represented by dashed lines, to the interfaces 2a..2n, that is to say the interfaces of the output components 2a..2n. The interconnection intelligence required for the interconnection of the components 1, 2a..2n, illustrated in the exemplary embodiment in Figure 1, is either available locally as interconnection information 6 in the component 1, or is managed centrally at a central point as interconnection information 3. Shifting the interconnection intelligence from a container which surrounds the components, but which is not shown in any more detail in Figure 1 for reasons of clarity, to the components 1, 2a..2n makes it possible to design the container to be simpler. In consequence, the container no longer needs to have a script or programming capability, thus resulting in greater independence of the containers which are actually used.

**[0012]** Figure 2 is a further exemplary embodiment of a system for interconnection of components 1, 2. In the exemplary embodiment illustrated in Figure 2, the components 1, 2 are not interconnected directly via the interfaces S1, S2 of the components 1, 2, but by the interposition of a special interconnection component 7. The interconnection component 7 has interfaces S7a, S7b, with the interface S1 of the input component being interconnected with the interface S7a of the interconnection component. In a similar way, the output interface S7b of the interconnection component 7 is interconnected with the input interface S2 of the output component 2.

**[0013]** The use of the interconnection component 7, whose object is to interconnect the input component S1 and the output component 2 with one another, also makes it possible to provide an adapter functionality. This adapter functionality may, for example, comprise the interfaces of two components 1, 2 which do not match exactly being subjected to matching by the interconnection component 2. Mapping from a method base, for example, is thus possible, which, even in the case of few parameters at, for example, standard values, carries out range conversion etc. In order to explain the terminology, reference should be made, for example, to the book "Activ X und OLE verstehen" Understand Active X and OLE, by David Chappell, Microsoft Press, Unterschleißheim.

**[0014]** In summary, the invention thus relates to a system and a method for interconnection of components 1, 2a..2n, in particular of software components for at least one data processing application. For interconnection of the components 1, 2a..2n without any special programming, for example in the form of what is referred to as glue code, it is proposed that the components 1, 2a..2n have at least one interface S1, S2a..S2n, which are intended for direct interconnection of the components 1, 2a..2n. In an alternative embodiment, the components 1, 2 have interfaces S1, S2, which are interconnected with one another via an interconnection component 7.

## SUBSTITUTE ABSTRACT

### ABSTRACT OF DISCLOSURE

#### SYSTEM AND METHOD FOR INTERCONNECTION OF COMPONENTS

The invention relates to a system and a method for interconnection of components, in particular of software components for at least one data processing application. For interconnection of the components without special programming, for example in the form of what is referred to as glue code, the invention proposes that the components have at least one interface which is intended for direct interconnection of components. In an alternative embodiment, the components have interfaces which are interconnected with one another via an interconnection component.

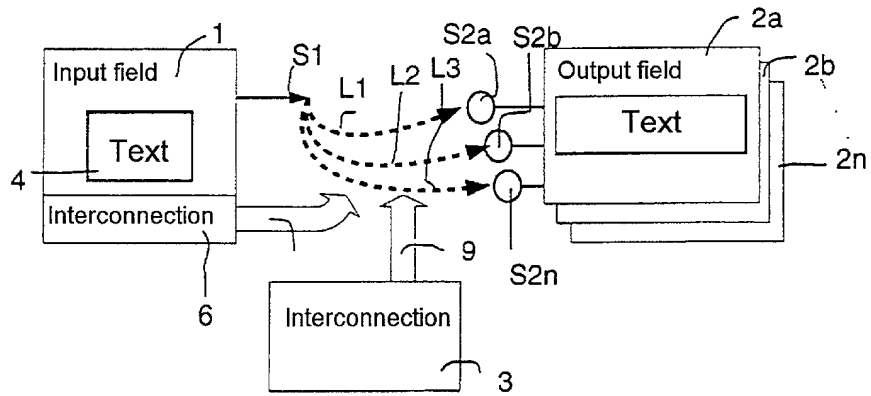


Fig. 1

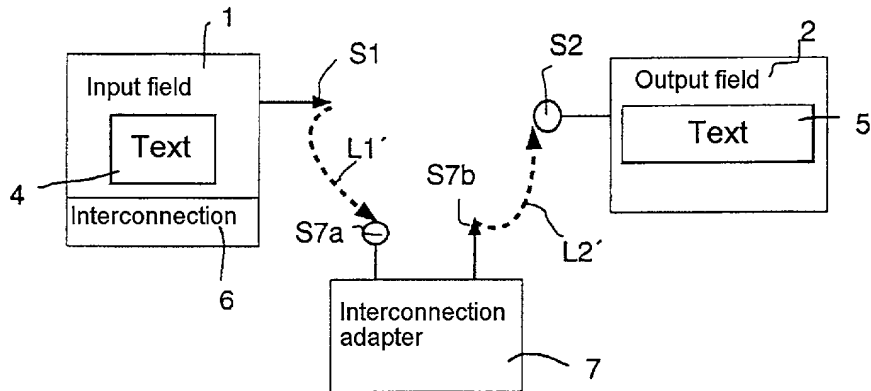


Fig. 2

## MARKED UP COPY OF SUBSTITUTE SPECIFICATION

### TITLE OF THE INVENTION

#### SYSTEM AND METHOD FOR INTERCONNECTION OF COMPONENTS

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

[0001] The invention relates to a system and a method for interconnection of components, in particular of software components for at least one data processing application.

#### 2. Description of the Related Art

[0002] Such a system is used, for example, in the field of software applications. In this case, there is frequently a desire to construct the individual applications from reusable components. This results in the necessity to interconnect the individual components with one another in various combinations. Components are in this case generally interconnected by [means of] special programming, which is referred to as glue code, but this may involve considerable effort.

### SUMMARY OF THE INVENTION

[0003] The invention is based on the object of specifying a system and a method for interconnection of components, which allows interconnection of the components without special programming, for example in the form of what is referred to as glue code.

[0004] This object is achieved by a system and a method having [the features specified in claims 1 and 6, respectively. In this case, the] interfaces, for example input/output interfaces, [are] interconnected with one another either directly or with the interposition of the interconnection components. The effort for interconnection of the components is thus considerably reduced. Furthermore, it is possible to interconnect the components with one another in different configurations in a reusable manner. Special connection programming, for example in the form of glue code, is completely avoided, and all that is required is simple connection configuration. Overall, this leads to the interconnection intelligence being shifted from a container which surrounds the components into the components themselves. This makes it possible to design the container to be simpler since it no longer needs to have the capacity for script or programming.

[0005] Shifting the interconnection intelligence from a container which surrounds the components to the components themselves can be ensured by the interconnection components containing information which is intended for interconnection of components.

[0006] One advantageous application option is for the components to be in the form of ActiveX components, in particular input and output components.

[0007] The object of an adapter function for the interconnection components can be taken into account by the interconnection component being provided for automatic active coupling and/or for adaptation of interfaces which do not match, or do not entirely match.

[0008] The complexity, for example, for memory space for storage of interconnection information and special container configurations can thus be considerably be reduced, since the components are intended for multiple interconnection with further components.

[0009] The invention will be described and explained in more detail in the following text with reference to the exemplary embodiments, which are illustrated in the figures, in which:

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 [shows] is a block diagram of an exemplary embodiment of a system for interconnection of components, with direct interconnection of the components, and

Figure 2 [shows] is a further exemplary embodiment of a system for interconnection of components, with interconnection of the components via an intermediate interconnection component.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0010] Figure 1 [shows] is a block diagram of a first exemplary embodiment of a system for interconnection of components 1, 2a..2n, with direct interconnection of the components 1, 2a..2n. The first component 1 is, for example, an input component, which has an input text field 4. Furthermore, the input component 1 contains interconnection information 6, which includes interconnection information for interconnection of an interface S1 for the input component 1 with further components 2a..2n. The further components 2a..2n are, for example, output components, which have an output text field 5 for outputting a text which can be entered in the input text field 4 of the first component. Furthermore, the further components 2a..2n have a respective interface S2a..S2n, each of which can be interconnected with the interface S1. In addition to the local interconnection information 6 in the first input component 1, central

interconnection information 3 is furthermore provided in the exemplary embodiment illustrated in Figure 1 and, for example, contains centrally stored interconnection information for interconnection of the components 1, 2a..2n. The local interconnection information 6 and the central interconnection information 3 thus control the interconnection of the components 1, 2a..2n, via the signal flows which are indicated by arrows 8, 9 in Figure 1.

**[0011]** The special feature of the system illustrated in Figure 1 for interconnection of software components 1, 2a..2n is that the components 1, 2a..2n are connected to one another without any complex programming, which is referred to as glue code, since the components are connected to one another via the interfaces S1, S2..S2n, which generally exist in any case in the software components 1, 2a..2n. One application example is, for example, the interconnection of what are referred to as ActiveX components in the Microsoft Windows environment. For example, ActiveX components can be interconnected, for example, from the Internet Explorer, come from Visual Basic, etc. The input component 1 uses as the input field, for example, a defined outgoing-COM interface S1. Where the input field 4 is amended, the edited text is interconnected via the interface S1, via the lines L1..Ln represented by dashed lines, to the interfaces 2a..2n, that is to say the interfaces of the output components 2a..2n. The interconnection intelligence required for the interconnection of the components 1, 2a..2n, illustrated in the exemplary embodiment in Figure 1, is either available locally as interconnection information 6 in the component 1, or is managed centrally at a central point as interconnection information 3. Shifting the interconnection intelligence from a container which surrounds the components, but which is not shown in any more detail in Figure 1 for reasons of clarity, to the components 1, 2a..2n makes it possible to design the container to be simpler. In consequence, the container no longer needs to have a script or programming capability, thus resulting in greater independence of the containers which are actually used.

**[0012]** Figure 2 [shows] is a further exemplary embodiment of a system for interconnection of components 1, 2. In the exemplary embodiment illustrated in Figure 2, the components 1, 2 are not interconnected directly via the interfaces S1, S2 of the components 1, 2, but by the interposition of a special interconnection component 7. The interconnection component 7 has interfaces S7a, S7b, with the interface S1 of the input component being interconnected with the interface S7a of the interconnection component. In a similar way, the output interface S7b of the interconnection component 7 is interconnected with the input interface S2 of the output component 2.

**[0013]** The use of the interconnection component 7, whose object is to interconnect the input component S1 and the output component 2 with one another, also makes it possible to provide an adapter functionality. This adapter functionality may, for example, comprise the interfaces of two components 1, 2 which do not match exactly being subjected to matching by the interconnection component 2. Mapping from a method base, for example, is thus possible, which, even in the case of ten parameters at, for example, standard values, carries out range conversion etc. In order to explain the terminology, reference should be made, for example, to the book "Activ X und OLE verstehen" [Understand Active X and OLE] Understand Active X and OLE, by David Chappell, Microsoft Press, Unterschleißheim.

**[0014]** In summary, the invention thus relates to a system and a method for interconnection of components 1, 2a..2n, in particular of software components for at least one data processing application. For interconnection of the components 1, 2a..2n without any special programming, for example in the form of what is referred to as glue code, it is proposed that the components 1, 2a..2n have at least one interface S1, S2a..S2n, which are intended for direct interconnection of the components 1, 2a..2n. In an alternative embodiment, the components 1, 2 have interfaces S1, S2, which are interconnected with one another via an interconnection component 7.



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531 Rec'd PCT/PTC 16 AUG 2001

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Description

System and method for interconnection of components

- 5 The invention relates to a system and a method for interconnection of components, in particular of software components for at least one data processing application.
- 10 Such a system is used, for example, in the field of software applications. In this case, there is frequently a desire to construct the individual applications from reusable components. This results in the necessity to interconnect the individual components
- 15 with one another in various combinations. Components are in this case generally interconnected by means of special programming, which is referred to as glue code, but this may involve considerable effort.
- 20 The invention is based on the object of specifying a system and a method for interconnection of components, which allows interconnection of the components without special programming, for example in the form of what is referred to as glue code.
- 25 This object is achieved by a system and a method having the features specified in claims 1 and 6, respectively.
- 30 In this case, the interfaces, for example input/output interfaces, are interconnected with one another either directly or with the interposition of the interconnection components. The effort for interconnection of the components is thus considerably reduced. Furthermore, it is possible to interconnect
- 35 the components with one another in different configurations in a reusable manner. Special connection programming, for example in the form of glue code, is

- 1a -

completely avoided, and all that is required is simple connection configuration. Overall, this leads to

the interconnection intelligence being shifted from a container which surrounds the components into the components themselves. This makes it possible to design the container to be simpler since it no longer needs to  
5 have the capacity for script or programming.

Shifting the interconnection intelligence from a container which surrounds the components to the components themselves can be ensured by the  
10 interconnection components containing information which is intended for interconnection of components.

One advantageous application option is for the components to be in the form of ActiveX components, in  
15 particular input and output components.

The object of an adapter function for the interconnection components can be taken into account by the interconnection component being provided for  
20 automatic active coupling and/or for adaptation of interfaces which do not match, or do not entirely match.

The complexity, for example, for memory space for  
25 storage of interconnection information and special container configurations can thus be considerably be reduced, since the components are intended for multiple interconnection with further components.

30 The invention will be described and explained in more detail in the following text with reference to the exemplary embodiments, which are illustrated in the figures, in which:

35 Figure 1 shows a block diagram of an exemplary embodiment of a system for interconnection of components, with direct interconnection of the components, and

Figure 2 shows a further exemplary embodiment of a system for interconnection of components, with interconnection of the components via an intermediate interconnection component.

5

Figure 1 shows a block diagram of a first exemplary embodiment of a system for interconnection of components 1, 2a..2n, with direct interconnection of the components 1, 2a..2n. The first component 1 is, for example, an input component, which has an input text field 4. Furthermore, the input component 1 contains interconnection information 6, which includes interconnection information for interconnection of an interface S1 for the input component 1 with further components 2a..2n. The further components 2a..2n are, for example, output components, which have an output text field 5 for outputting a text which can be entered in the input text field 4 of the first component. Furthermore, the further components 2a..2n have a respective interface S2a..S2n, each of which can be interconnected with the interface S1. In addition to the local interconnection information 6 in the first input component 1, central interconnection information 3 is furthermore provided in the exemplary embodiment illustrated in Figure 1 and, for example, contains centrally stored interconnection information for interconnection of the components 1, 2a..2n. The local interconnection information 6 and the central interconnection information 3 thus control the interconnection of the components 1, 2a..2n, via the signal flows which are indicated by arrows 8, 9 in Figure 1.

The special feature of the system illustrated in Figure 1 for interconnection of software components 1, 2a..2n is that the components 1, 2a..2n are connected to one another without any complex programming, which is referred to as glue code, since the components are

connected to one another via the interfaces S1, S2..S2n, which generally exist in any case in the software components 1, 2a..2n. One application example

is, for example, the interconnection of what are referred to as ActiveX components in the Microsoft Windows environment. For example, ActiveX components can be interconnected, for example, from the Internet Explorer, come from Visual Basic, etc. The input component 1 uses as the input field, for example, a defined outgoing-COM interface S1. Where the input field 4 is amended, the edited text is interconnected via the interface S1, via the lines L1..Ln represented by dashed lines, to the interfaces 2a..2n, that is to say the interfaces of the output components 2a..2n. The interconnection intelligence required for the interconnection of the components 1, 2a..2n, illustrated in the exemplary embodiment in Figure 1, is either available locally as interconnection information 6 in the component 1, or is managed centrally at a central point as interconnection information 3. Shifting the interconnection intelligence from a container which surrounds the components, but which is not shown in any more detail in Figure 1 for reasons of clarity, to the components 1, 2a..2n makes it possible to design the container to be simpler. In consequence, the container no longer needs to have a script or programming capability, thus resulting in greater independence of the containers which are actually used.

Figure 2 shows a further exemplary embodiment of a system for interconnection of components 1, 2. In the exemplary embodiment illustrated in Figure 2, the components 1, 2 are not interconnected directly via the interfaces S1, S2 of the components 1, 2, but by the interposition of a special interconnection component 7. The interconnection component 7 has interfaces S7a, S7b, with the interface S1 of the input component being interconnected with the interface S7a of the interconnection component. In a similar way, the output interface S7b of the interconnection component 7 is interconnected with the input interface S2 of the output component 2.

The use of the interconnection component 7, whose object is to interconnect the input component S1 and the output component 2 with one another, also makes it possible to provide an adapter functionality. This  
5 adapter functionality may, for example, comprise the interfaces of two components 1, 2 which do not match exactly being subjected to matching by the interconnection component 2. Mapping from a method base, for example, is thus possible, which, even in the  
10 case of fen parameters at, for example, standard values, carries out range conversion etc. In order to explain the terminology, reference should be made, for example, to the book "Activ X und OLE verstehen" [Understand Active X and OLE], by David Chappell,  
15 Microsoft Press, Unterschleißheim.

In summary, the invention thus relates to a system and a method for interconnection of components 1, 2a..2n, in particular of software components for at least one  
20 data processing application. For interconnection of the components 1, 2a..2n without any special programming, for example in the form of what is referred to as glue code, it is proposed that the components 1, 2a..2n have at least one interface S1, S2a..S2n, which are intended  
25 for direct interconnection of the components 1, 2a..2n. In an alternative embodiment, the components 1, 2 have interfaces S1, S2, which are interconnected with one another via an interconnection component 7.

Patent Claims

1. A system for interconnection of components (1, 2a..2n; 1, 2), in particular of software components for at least one data processing application, with the components (1, 2a..2n; 1, 2) having at least one interface (S1, S2a..S2n; S1, S2) which is intended for interconnection of the components (1, 2a..2n; 1, 2) by means of an interconnection component (7), with the interconnection component (7) containing information which is required for interconnection of the components (1, 2a..2n; 1, 2), and with the information which is required for the interconnection of the components (1, 2a..2n; 1, 2) not being contained in a container which surrounds the components.
2. The system as claimed in claim 1, characterized in that the interconnection intelligence, which is required for the interconnection of the components (1, 2a..2n; 1, 2), in the components (1, 2a..2n; 1, 2) is provided locally as interconnection information (6).
3. The system as claimed in one of the preceding claims, characterized in that the components (1, 2a..2n; 1, 2) are in the form of ActiveX components, in particular input and output components.
4. The system as claimed in one of the preceding claims, characterized



- 6a -

in that the interconnection component (7) is intended for components (1, 2a..2n; 1, 2) which are to be interconnected to search for matching interfaces (S1, S2a..S2n; S1, S2).

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5. The system as claimed in one of the preceding claims,

characterized

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in that the components (1, 2a..2n; 1, 2) are intended for multiple interconnection with further components.

- 7 -

6. A method for interconnection of components (1, 2a..2n; 1, 2), in particular of software components for at least one data processing application, in which the components (1, 2a..2n; 1, 2) are interconnected via at least one interface (S1, S2a..S2n; S1, S2), by means of an interconnection component (7), with the interconnection component (7) containing information which is required for interconnection of the components (1, 2a..2n; 1, 2), and with the information which is required for the interconnection of the components (1, 2a..2n; 1, 2) not being contained in a container which surrounds the components.
7. The method as claimed in claim 6, characterized in that the interconnection intelligence, which is required for the interconnection of the components (1, 2a..2n; 1, 2) in the components (1, 2a..2n; 1, 2) is provided locally as interconnection information (6).
8. The method as claimed in one of claims 6 or 7, characterized in that the components (1, 2a..2n; 1, 2) are in the form of ActiveX components, in particular input and output components.
9. The method as claimed in one of claims 6 to 8, characterized in that the interconnection component (7) searches for matching interfaces (S1, S2a..S2n; S1, S2) from components (1, 2a..2n; 1, 2) which are to be interconnected.

- 7a -

10. The method as claimed in one of claims 6 to 9,  
characterized  
in that the components (1, 2a..2n; 1, 2) are used  
for multiple interconnection with further  
components.
- 5

Abstract

System and method for interconnection of components

The invention relates to a system and a method for interconnection of components (1, 2a..2n), in particular of software components for at least one data processing application. For interconnection of the components (1, 2a..2n) without special programming, for example in the form of what is referred to as glue code, the invention proposes that the components (1, 2a..2n) have at least one interface (S1, S2a..S2n) which is intended for direct interconnection of components (1, 2a..2n). In an alternative embodiment, the components (1, 2) have interfaces (S1, S2) which are interconnected with one another via an interconnection component (7).

Figure 1

**Fig. 2**

# Declaration and Power of Attorney For Patent Application

## Erklärung Für Patentanmeldungen Mit Vollmacht

### German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

#### System und Verfahren zur Verschaltung von Komponenten

deren Beschreibung

(zutreffendes ankreuzen)

☐ hier beigefügt ist.

☒ am 02.02.2000 als

PCT internationale Anmeldung

PCT Anwendungsnummer PCT/DE00/00313

eingereicht wurde und am \_\_\_\_\_

abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

#### System and method for interconnecting components

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on 02.02.2000 as

PCT international application

PCT Application No. PCT/DE00/00313

and was amended on \_\_\_\_\_  
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

## German Language Declaration

Prior foreign applications  
Priorität beansprucht

Priority Claimed

19906358.3

DE

16.02.1999

☒

☐

(Number)  
(Nummer)

(Country)  
(Land)

(Day Month Year Filed)  
(Tag Monat Jahr eingereicht)

Yes  
Ja

No  
Nein

(Number)  
(Nummer)

(Country)  
(Land)

(Day Month Year Filed)  
(Tag Monat Jahr eingereicht)

☐  
Yes  
Ja

☐  
No  
Nein

(Number)  
(Nummer)

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Yes  
Ja

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Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/DE00/00313

02.02.2000

(Status)

pending

(Application Serial No.)  
(Anmeldeseriennummer)

(Filing Date D, M, Y)  
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Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden können, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

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## German Language Declaration

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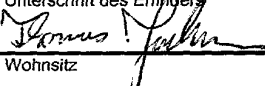
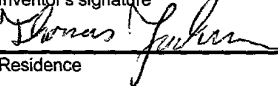
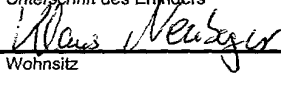
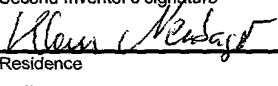
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(Supply similar information and signature for third and subsequent joint inventors).